



THE UPPER WHITE RIVER REVIEW



*The Newsletter of the South Missouri Water Quality Project, a USDA-NRCS Water Quality Office
Providing Conservation Solutions To Non-Point Source Water Pollution.*

Clear...Concise...and to the Non-Point

1786 S. 16th Avenue, Suite 105
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Volume 2, Issue 1
April 2005

Stewardship Compass by Steve Hefner



*South Missouri Water
Quality Project Team Leader*

This past fall, Dad and I spent an afternoon cleaning up some debris on our Ozark farm. We noticed that with each passing month, the old white oak located near the barn continued to lean further. Although the oak died some time back, it remained rooted in place and standing. It was an important artifact for my family; one of the few items that pre-dated the ownership of our century farm. Despite our admiration for the tree, we decided it was unsafe. Dad and I pushed it to the ground and set it on fire.

As the fire consumed the oak, I detected a brief sense of reservation from my Dad. Although he did not have much to say, I couldn't help but wonder whether the end of an era had passed. This oak "witnessed" transit by horse and buggy and the ping of the blacksmith's hammer. This con-

trasts quite differently with today's fast paced lifestyle filled with deadlines, commitments, and an expectation of instantaneous results. Yet, trees do not operate on this same schedule. They require patience and visionary ownership to flourish. The full rewards of tree planting are not usually recognized immediately.

The whole experience reminded me again just how amazing trees are. What person has not enjoyed either the shade of a tree on a hot day, or the beauty of a dogwood in the spring? When we experience these pleasures, we easily recognize some of the benefits of trees. The beautiful blooms and the comfort of the shade are obvious. However, trees provide many other benefits that are less obvious but of vital importance, especially concerning water quality. This edition of the *Upper White River Review* features some of the beneficial aspects of trees regarding natural resources stewardship.

Spring has now arrived. I plan to plant another oak by the barn for future generations of my family to enjoy. I'm optimistic about what this tree will "experience" as it grows by the barn. Indeed, I think a new era is on the horizon.

Technical Committee Taking Shape

Based on input from our steering committee, the South Missouri Water Quality (SMWQ) Project has been recruiting individuals to serve on a new technical committee. This technical working group, comprised of key federal, state, and local representatives, will ensure dialogue among specialists with respect to water quality standards, recommended conservation and restoration activities, and funding opportunities.

The technical committee will provide guidance on how best to achieve the SMWQ Project's objectives established by NRCS administration and the steering committee. To date, representatives from the Missouri Department of Conservation, University Extension, Department of Natural Resources, City of Springfield, Fish and Wildlife Service, and Missouri Farmers Association have agreed to serve.

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Multi-Agency Collaboration Leads to Improved Watershed Protection



Larry Martien, Private Lands Conservationist with the Missouri Department of Conservation, placing willows along the bank of the James River in Stone County.

In March 2005, an extensive riparian forest buffer was planted along the James River in Stone County. The buffer involved 2.7 miles of stream bank. The area was previously overgrazed by livestock with unlimited access to the river. As a result, river banks were devoid of vegetation and experiencing accelerated erosion rates. After an initial site visit, South Missouri Water Quality (SMWQ) Project staff began collaboration with the Missouri Department of Conservation (MDC) to address the landowner's concerns for both stream and farmland conservation practices.

On the outer banks of the river, Robert DeMoss, SMWQ staff forester, planned a buffer with

selected tree species to filter overland flow, provide cover for wildlife, and begin rehabilitation of the riparian areas. A 180 ft. wide area planted over the length of stream bank resulted in a 52 acre buffer of approximately 19,000 tree and shrub seedlings. As these plants develop and mature, they will be in place to slow flood waters, trap large debris, and reduce the potential for soil loss.

In the stream, Larry Martien, MDC Private Lands Conservationist, designed a vegetative treatment to address the stream bank erosion concern. Branches of willow trees were cut into 18-24 inch stakes from estab-

lished trees along local creeks and gravel bars. Stakes were soaked for about 7 days and then inserted into the toe of the stream bank. The



Young Riparian Forest Buffer

established vegetation will have flexible stems that will bend and form a "protective blanket" over the stream bank as flood waters rise in the stream. This method has been proven successful on many Ozark streams.

Landowners with similar concerns may contact their local USDA-NRCS Service Center, the SMWQ Project, or MDC private lands conservationists to begin learning about the conservation options available.

SMWQ Project Staff Member Receives National USDA Award

"Short-term projects are a great way to involve volunteers with specialized skills. The projects benefit from their expertise, and the volunteers become advocates within the community."

Mary Giles



Mary E. Giles, Earth Team Coordinator at the SMWQ Project, recently received a national Earth Team Award from USDA. Mary received the "NRCS Employee Most Supportive of the Earth Team Program" award. Mary recruited

and coordinated 21 volunteers during 2004 who performed public service that fit the mission of the SMWQ Project and ultimately the NRCS. The volunteers logged 572 hours of volunteer service and worked on five major projects. The volunteer projects included a steering committee, an assessment of the Ward branch within the James River watershed, an urban nutrient manage-

ment project, a digital library of photographs, and the translation of an urban nutrient management public service announcement into Spanish.

Mary joined the SMWQ Project staff in January 2004. Her background is in communications and management. Her past experience includes 15 years in non-profit organizations and advertising.

Trees and Watershed Dynamics

The value of trees in protecting watersheds cannot be overstated. Forest canopies interrupt the erosive



A riparian buffer on Goff Creek in Stone County

forces of precipitation as water falls from the sky, resulting in more sediment left in place. Trees in riparian areas also combat shear forces of stream flow and help stabilize banks. Presently, sediment is the most

abundant contaminant in Missouri waters. Sediment is delivered to streams through erosion, a natural process often accelerated by mankind. The management of vegetation (including trees) in a watershed influences sediment movement and delivery to streams.

Adequate vegetative land cover is indeed a critical aspect in preventing soil detachment, the first step in the erosion process. Following detachment, soil is then transported to a place of deposition. An established riparian buffer located adjacent to a body of water can intercept sediment, nutrients, and other materials in runoff before reaching surface water. The filtering occurs as the runoff passes through the buildup of leaf litter. Captured nutrients are then utilized by the trees for growth.

Aquatic life in streams benefit from trees growing near streams in

many ways. In small streams, the energy sources required by aquatic life are dependent on materials coming from outside the channel (e.g. leaves and twigs). In addition to serving as an energy source for aquatic life, the leaves and branches that enter streams from trees also provide habitat for fish. Algal growth along streams is also limited by shade from forested canopies by reducing sunlight and maintaining cooler water.

A significant portion of the vegetation in the Upper White River Basin is trees. Since the last newsletter posting, the South Missouri Water Quality Project has provided forestry assistance to private landowners on over 4,200 acres. Anyone interested in planting trees or managing existing stands may contact the local USDA Service Center or the SMWQ Project office for assistance.

Traveling Trunks Available in Christian County

The Christian County Soil and Water Conservation District received a grant for three traveling trunks to be used in the education of children within the district. The trunks are categorized for elementary, middle school, and high school.

The trunks are available for schools within Christian County and

are free-of-charge.

Some of the items available in the trunks are: age appropriate books, video's, posters, magnifying glasses, a geotechnical gauge, a Berlese apparatus, a Munsell color chart, a soil study kit, a soil organism study kit, and a USDA soil texturing field flow chart.

Anyone interested in more information about the trunks may contact Michelle Lee at the Christian County Field Office, USDA Service Center, 1786 S. 16th Avenue, Suite 102, Ozark, MO 65721. She may also be contacted at the Field Office number: 417-581-2719 ext. 3 or by email at michelle.lee@mo.nacdnet.net.

Active Sinkhole Forms in Barry County

Much has been written about karst topography in Southwest Missouri and the evidence can be seen anytime a spring, cave, or sinkhole is viewed. Cracks in limestone and dolomite deposits beneath the ground have dissolved over time as acidic rainfall has percolated through soil profiles. The result is an underground landscape full of caves, sinkholes, underground rivers, and springs. Sinkholes are formed as underground voids collapse leaving behind a surface depression.

A vivid reminder of sinkhole formation was witnessed by many in Barry County as an underground collapse resulted in a large hole forming in a pasture. Various investigations place the depth greater than 100 feet. The collapse has left vertical soil banks (as illustrated in photos to the right) that are at an unstable grade and required local officials to close a road.

The top photo was taken at the onset of the collapse. The bottom photo was taken 5 days later.



Newly formed sinkholes in Barry County

Considerations for Planting a Tree

When spring arrives and plants begin to grow, many desire to add trees or shrubs to their property for beautification, shade, or erosion control. Some of these impromptu plantings will turn out to be failures due to lack of planning. There are many factors that should be evaluated before a landowner decides to plant a tree or shrub.

CONSIDER THE SITE. Overhead power lines, or buried water or sewer lines beneath the surface, will affect the tree or shrub. These areas should be avoided if at all possible. Many landowners have established majestic trees, only to have them excessively pruned by right-of-way crews maintaining telephone and electric lines. Consider the potential height of your plant before planting in such an area to avoid such problems.

CONSIDER MOISTURE REQUIREMENTS. Make sure your species selection is tolerant of the conditions present. Many species will thrive in shade or full sun. The amount of sun or shade influences water available for plants. Soils located in shady sites, or those on the north or east sides of buildings, will generally retain moisture for longer periods. Soils found in open landscapes or situated on southern or western aspects will receive more hours of sunlight and have less available water.

CONSIDER SPECIES SELECTION. Find a species that is native to your area. These species usually thrive. Some non-native species are prolific seed producers and can become invasive to other areas.

CONSIDER MAINTENANCE AND WEED CONTROL. Competition comes in the form of weeds,

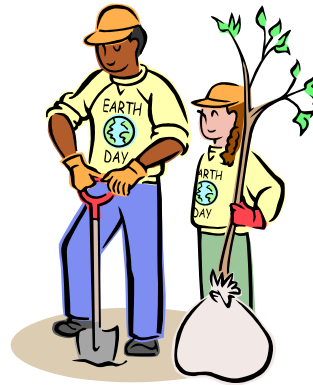
grasses, or other plant life growing near the planting. Grass species have thousands of fibrous roots just below the soil surface that can rob needed moisture and nutrients from the tree or shrub. Adequate weed control can be achieved by periodically pulling weeds and grass by hand or by using a weed barrier or mulch ring around the tree. Multiple plantings over larger areas, such as those that might be established in an abandoned field or along a property line (e.g. for windbreaks or a privacy screen), may be harder to maintain sufficient weed control. In these situations it is recommended that you do a combination of things to reduce competition.

(1) A fall application of herbicide prior to spring planting will significantly reduce weed competition.

(2) Just before spring planting, a weed barrier material can be staked at each interval where the trees are to be planted. Mulch should be placed around each tree covering the weed barrier to aid in moisture retention.

(3) Mowing between the trees will keep the grass and weeds down. This will prevent habitat for rabbits and other pests that may girdle your new plantings. Adequate weed control for the first three years will allow the trees to develop more quickly and become better established.

CONSIDER CONSULTING A PROFESSIONAL. Visit with your nursery staff about planting details before deciding upon a species. You can also contact an arborist or forester for additional help. With a little planning and understanding of the growth requirements of your trees, you can have a successful planting.



Outreach to the Watershed's Youngest Residents

Amanda O'Neil, an Earth Team volunteer and Southwest Missouri State University student majoring in Agriculture and Business, recently began presenting preschool water quality lessons in daycares and preschools within the watershed. Amanda developed the lessons plans which target the water cycle, water pollution, and water conservation under the supervision of the SMWQ Project staff. The lessons target 3-5 year olds. Parents receive a letter from Amanda following her visit with their child which informs them of the key concepts that were taught, along with a fact sheet about the SMWQ Project office. An activity sheet for the child to work at home is included which reinforces the water concepts. Amanda's presenta-

tions have been well received by parents and children as indicated by parent-to-parent referrals for scheduling in facilities in the Springfield area.



Amanda talking with children about water in a 4-5 year old class.

SMWQ Project Becomes Community Partner

In August 2004, the SMWQ Project became a Community Partner through the Citizenship and Service-Learning Program (CASL) at Southwest Missouri State University in Springfield. Students engage in meaningful community service while applying academic knowledge to solve real-life problems.

When a student registers in a course with a service-learning option, he or she provides 40 hours of unpaid service that semester to benefit an external government agency, non-profit service organization, or public/private school. The student receives an additional credit hour for the learning gained by engaging in some form of reflection or study that is related to the service. The course instructor designs the special assignments that help link the academic with the applied learning. Grades are assigned by the course instructor according to the quality of the service rendered to the community partner and the project(s) completed by the student.

The SMWQ had three service learning students during the 2004-2005 academic year. All dually enrolled as Earth Team volunteers.



Jennifer Mills, a SMSU Journalism student, began a library of digital photographs.

"When I first started in the South Missouri Water Quality Office, I had never really thought about the role USDA plays in agriculture or even heard of the Natural Resources Conservation Service. I gained more than experience as a photographer during my time of service. I am more knowledgeable about issues related to soil and water quality, and aware of assistance the government provides farmers and urban landowners."

Jennifer Mills



Karla Claunch

Karla Claunch, a SMSU Photo-Journalism student, took over 300 water quality related photographs which were added to the SMWQ li-

brary. The photographs will be available for use as illustrations in future SMWQ publications.



Brandon Haddock

Brandon Haddock, an SMSU Geography student, created a large wall map of the Upper White River Basin. The map, made using ARC-MAP, will

be displayed in a government building and used in adult education outreach.

Studio 508 Develops Visual Communication Projects

During the month of January 2005, Design Studio 508, a group of graphic design students enrolled in the Spring 2005 Professional Design Practicum at Southwest Missouri State University, developed visual communication projects for the SMWQ Project office. Projects included urban, forestry, and nutrient management brochures; posters of the water cycle, urban conservation, nutrient management, and the watershed; and preschool curriculum, which included interactive web pages, an activity board, posters, and a jingle. Following approval, the SMWQ staff plan to utilize these projects in education outreach.



Front row, left to right: Roman Duszek, instructor, Ben Krueger, Leah Long, Melissa Correnti Back Row: Sarah Washer, Katie McClure, Latika Chongkuatrakul, Connie Snelson, Ryan Baker. All students were dually enrolled as Earth Team volunteers.

Creek Corner

Galloway Creek

Profiling the small streams of the Upper White River Basin

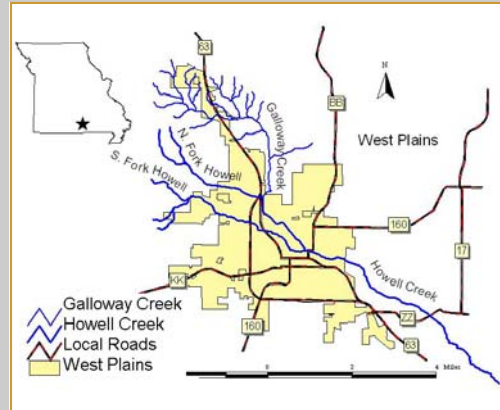
Galloway Creek, located in Howell County emanates north of West Plains. This watershed is predominately made up of agricultural land uses with minor urban and commercial districts along Highway 63. Galloway Creek is an intermittent creek that has perennial flow in some sections but loses in the majority of its reaches. Galloway Creek eventually flows into Howell Creek within the city limits of West Plains. Both Galloway and Howell Creeks are losing streams. Their water eventually comes out at Mammoth Springs in Arkansas as confirmed by dye traces.

The City of West Plains is in the process of developing a 40-acre tract of land along the banks of Galloway Creek into a nature park. This initiative is being supported by the city, local groups, and a parks grant awarded by the Missouri Department of Natural Resources.

Location: Howell County, Missouri

Drainage: 6.1 Square Miles

Receiving Stream: Howell Creek



Artists Assist Staff with Outreach Education

Three artists have recently assisted the SMWQ Project by drawing sketches that were used in an education outreach event in an Adult Education and Literacy class at Ozark Technical Community College in Springfield.



Clarissa Soto

Clarissa Soto, an Earth Team volunteer and graphic design student at Evangel University in Springfield, drew a farm nutrient management sketch illustrating sinkholes, karst topography, rotational grazing, and various resource protection areas.



Juanita Schuler

Juanita Schuler, an art instructor at Sullivan High School, Sullivan, and East Central College, Union, drew a sketch illustrating typical sources of water pollution in an urban neighborhood.



Jeanene Turney

Jeanene Turney, an Earth Team volunteer and student at Ozark Technical Community College, drew a sketch illustrating riparian buffers, glades, and karst topography.

Intern Promotes Conservation in West Plains

The SMWQ Project partnered with Southwest Missouri State University-West Plains to initiate urban nutrient management planning in West Plains.

Theresa Wildhaber, a student at the university, promoted urban nutrient lawn planning at the Lawn and Garden Trade Show in West Plains in March, 2005. This outreach event generated 7 requests for service.

Theresa worked with each of the homeowners

to soil sample the lawns. Theresa also completed an inventory of bagged fertilizer available in the West Plains area. Conservation plans were prepared that matched the nutrient requirements identified through soil testing with an appropriate quantity of nutrients available at local retail outlets.

Theresa received three hours of credit from the university for this internship. She was dually enrolled as an Earth Team volunteer.